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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/920,281	08/02/2001	Radislav Alexandrovich Potyrailo	RD-26,350	5671
6147	7590	09/08/2004	EXAMINER	
GENERAL ELECTRIC COMPANY GLOBAL RESEARCH PATENT DOCKET RM. BLDG. K1-4A59 NISKAYUNA, NY 12309			SIEPKE, SAMUEL P	
			ART UNIT	PAPER NUMBER
			1743	

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/920,281

Applicant(s)

POTYRAILO ET AL.

Examiner

Samuel P Siefke

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 02 June 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-36 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims **1,2,6-9,17-26** are rejected under 35 U.S.C. 102(b) as being anticipated by Furuki et al. (USPN 5,411,709).

Furuki discloses a gas detector for simultaneously detecting a kind of gas to be detected and a gas concentration by simultaneously effecting adsorption measuring type gas detection and optical gas detection. The gas detecting element having a gas detector comprising a gas detecting element having a gas sensitive thin film disposed on a piezoelectric vibrating element (SAW) and adapted to generate fluorescence or phosphorescence when irradiated with a light, a light receiving element for receiving the fluorescence generated from the gas sensitive thin film and adapted to detect the intensity of the fluorescence. The wave-sensing element (SAW) comprises two electrodes coupled to the wave element (col. 10, lines 51-56); a coating being disposed

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on the entire wave element (col. 10, lines 54-59, fig.4, col. 11, lines 6-17); a source of EM radiation optically coupled to the wave sensing element, the radiation is modified by the interaction with the gas sensitive thin film which produces a modified EM radiation which can be matched to identify a product (col. 6, lines 38- col. 7, line 56); a first detector for detecting a change in a wave sensing element (mass ;col. 6, lines 9-37, col. 11, lines 39-68); a second detector for detecting an optical property (col. 6, lines 38- col. 7, line 56). Furuki discloses any oscillator circuit having piezoelectric vibrating element a transistor circuit, a TTL circuit, a C-MOS circuit or the like similar to those used for ordinary usages can be used (QCM, TSM). Furuki discloses a gas sensitive thin film layer has a property of adsorbing a gas to be detected, such as oxidizing and reducing gases include NO<sub>x</sub>, SO<sub>x</sub>, C<sub>2</sub>, O<sub>3</sub>, CO<sub>2</sub>, CO an organic acids NH<sub>3</sub>, H<sub>2</sub>S an organic amine and the like, organic solvent gases including various alcohols, acetone, chloroform, tetrachloroethylene, hexane, benzene, toluene, and the like, perfumes of such as ester, anesthetics and so on. It is inherent that the thin layer be porous because gases are adsorbed onto and into the thin layer.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims **5,10-16, 31-36** are rejected under 35 U.S.C. 103(a) as being unpatentable over Furuki et al. (USPN 5,411,709) in view of Ebersole et al. (USPN 5,756,279).

Furuki discloses a gas detector for simultaneously detecting a kind of gas to be detected and a gas concentration by simultaneously effecting adsorption measuring type gas detection and optical gas detection as described above.

Furuki does not teach specific polymeric materials that the gas sensitive thin film layer is made of, or the thickness of the thin film.

Ebersole discloses an optical acoustic wave sensor for detecting an analyte in a liquid sample. The sensor comprises an optical acoustic wave sensing element (QCM,SH-APM, piezoelectric oscillator SAW, waveguide, col. 6, lines 59-67, col. 9, lines 5-14) having two electrodes coupled to an acoustic wave element (col. 8, lines 48-61); a coating (poly(methyl methacrylate) col. 11, lines 18) being disposed on the acoustic wave element which undergoes a chemical interaction with chemical species to be detected to yield an optically detectable interaction product (col. 9, lines 17-50, col. 14, line 61- col. 15, line 30); a source of electromagnetic radiation optically coupled to

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the acoustic wave sensing element (col. 9, lines 32-50); a first detector for detecting a change (mass, viscoelastic col. 4, lines 27-39; col. 4, lines 59-61) in a property of the optical acoustic wave sensing element (col. 8, lines 48-67); a second detector for detecting an optical property of the interaction product (col. 9, lines 32-50); the QCM is an AT-cut and a BT-cut quartz crystal (col. 7, lines 4-7); the polymeric coating has a thickness between 10 nm and 100 micrometers (col. 4, lines 1-5; col. 9, lines 60-67); the optical waveguide is an optical fiber (col. 3, lines 9-19). It would have been obvious one of ordinary skill in the art to modify Furuki to include the polymeric material and thickness of Ebersole because it is known in the art that porous polymeric materials of Ebersole are used in SAW sensor to detect along with the thickness of the film layer.

Claims 26-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furuki et al. (USPN 5,411,709) in view of Ebersole et al. (USPN 5,756,279) as applied to claims **5,10-16** above, and further in view of Friedman (USPN 5,547,877).

Furuki discloses an optical acoustic wave sensor for detecting an analyte in a gas sample.

Furuki does not teach detecting chemicals in the group consisting of halogenated hydrocarbons such as TCE trichlorethane and trihalomethanes.

Friedman teaches detecting halogenated hydrocarbons which react with pyridine or alkyl-substituted compounds of pyridine to yield colored products in the presence of a strong base. Colored reaction products of chloroform, bromodichloromethane, chlorodibromomethane, bromoform and TCE strongly absorb at wavelengths of 538-540nm. Therefore it would have been obvious to one having an ordinary skill in the art

to modify Ebersole to use a polymeric layer that contains a pyridine or alkyl-substituted compound because of the specific reaction with halogenated hydrocarbons which produce a colored product.

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel P Siefke whose telephone number is 571-272-1262. The examiner can normally be reached on M-F 7:00am-5:00pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on 703-308-4037. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sam P. Siefke



August 27, 2004

  
Jill Warden  
Supervisory Patent Examiner  
Technology Center 1700